JPRS-WST-86-005

31 January 1986

West Europe Report

SCIENCE AND TECHNOLOGY

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WEST EUROPE REPORT

SCIENCE AND TECHNOLOGY

CONTENTS

AEROSPACE

FRANCE CHOOSES CORPS OF 7 ASTRONAUTS

Paris SCIENCES & AVENIR in French Oct 85 p 22

[Text] They are seven. The youngest among them is 26 years old, the oldest is 37. They suffer neither from epilepsy, hepatic colic nor obviously from dizziness. They are the members of the first corps of astronauts just created by the CNES [National Center for Space Studies]. The first member, honor to the ladies, is Claudie Deshayes, 28, a medical doctor specializing in rheumatology at Cochin Hospital; Jean-Jacques Favier, 37, head of the department of physics and solidification at the Grenoble Center of Nuclear Studies; Frederic Patat, 27, biophysician at the Tours faculty of medicine; Michel Viso, 34, veterinarian, research engineer at the National Institute of Agronomic Research [INRA]. They all form a group of experimenters. They are experts in one field. Then there is a group of flight engineers: Jean-Francois Clervoy, 26, engineer at the Toulouse CNES; Jean-Pierre Haignere, 37, chief of navigation personnel at the Bretigny-Base Test-Flight Center; and Michel Tognini, 35, test pilot at the Cazaux Base. They are responsible for the operations concerning the crew activity and the management of the facilities placed at the disposal of the experimenters. They can participate in the extra-vehicular walks, can be in charge of placing satellites in orbit or implementing scientific experiments in various fields. These seven astronauts were selected after very severe tests among the 715 candidates: 11 percent women and 89 percent men. They shall continue to work in their organization or their company until such time as they are chosen for a given mission. The first flight opportunities which will be offered to these French astronauts will certainly by either American (shuttle flight) or Soviet (flight aboard Soyuz T6 or Salyut 7). Later, it is with Hermes, but not before 1990 at the earliest, that these made in France astronauts will depart for space.

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CSO: 3698/147

AEROSPACE

BRIEFS

FRG, ITALY AEROSPACE FIRM--Bremen--The aviation and space concern MBB /Messerschmitt-Boelkow-Blohm/ /ERNO /expansion unknown/, Bremen, and the Italian enterprise Aer Italia, Turin, had decided to found Intospace GmbH /limited-liability company/, it was announced by MBB/ERNO. The company's home office is to be in Bremen. Intospace is to act as broker in the commercial use of outer space and is to work as promoter. The basis for this effort consists of the Texus, Spas, and Maus systems, which were developed for the European space industry, the Spacelab reusable space laboratory, and the platform. Other interested parties are also reported to be able to participate as partners. /Text/ /Landsberg PRODUCTION in German 10 Oct 85 p 2/ 5058

CSO: 3698/131

BIOTECHNOLOGY

SWEDEN PROMOTES BIOTECH RESEARCH AT NEW INSTITUTE

Helsingborg BIOTEKNIK & BIOKEMI in Swedish Nov 85 p 51

[Article by Guno Haskå]

[Text] Stiftelsen Bioteknisk Forskning

The interest in biotechnology has grown over the years. New companies are formed, and older companies become increasingly involved in biotech research and production. Within Stiftelsen Bioteknisk Forskning, SBF, we seek to channel this interest within the Nordic countries. The purpose of SBF is to encourage research within the area of biotechnology as well as to work for increased contacts among researchers and member companies. We also go actively in for training.

Organization

The activities of SBF are managed by a board. The responsibility for research programs and their implementation rests with specially selected program boards. A managing director and a secretary at the office of SBF at Lund are in charge of the current business.

Research Program

The research within the area of biotechnology has been intensive during the last few years. Despite the interest and the work that has been done, only a small number of processes based on new technology or new biocatalyzers have been introduced. The reason for this may be that the research has not sufficiently taken into consideration the conditions under which the process and/or biocatalyzers have to work. Nor have the research efforts always been carried through with regard to the total process economy.

In the course of the current 3-year period, together with STU, the Board for Technical Development, SBF will distribute approximately 1.8 million kronor per year, 45 percent of which will be contributed by STU. The cooperation will take place according to a framework agreement. The three areas of problems on which we shall be concentrating are all of such a nature as to constitute major obstacles to achieving commercial progress within many biotechnological processes.

Certain resources, however, have been earmarked for initiating projects of short duration and within new areas. We may also make contributions toward congresses, trips and similar activities.

The increased interest on the part of the biotech industry in the use of eucaryotic cells has induced SBF to plan a Nordic program on "Yeast Molecular Biology and Genetics for Future Industrial Application." The budget for the program, which is scheduled to be launched in the course of 1986, is 2.5 million kronor annually for 4 years. The financing is expected to be achieved through funds from Nordisk Industrifond, SBF, STU and the corresponding organizations in the other Nordic countries, as well as from various Nordic enterprises with an interest in the industrial application of yeast fungi.

Special Subject Days

In recent years, sometimes in cooperation with other organizations, SBF has arranged a large number of symposia and special subject days, which have concerned widely different aspects of biotechnology and its industrial application. We want especially to focus on the possibilities of making good contacts with persons interested in biotechnology from various universities, enterprises and organizations.

Training

Of recent years, it has become increasingly apparent that there is a great need for both fundamental and other training in biotechnology for various target groups within the trades and industries as well as the administration. SBF, therefore, has included training in its program and offers, in particular, such programs as are difficult to arrange within the public educational system.

Information

In the journal for our members, SBF-NYTT, we report on our special subject days, courses, the work of research groups, technical announcements, and the like. We also publish a series of reports, SBF-REPORT, which include various literature lists and research reports within Nordic biotechnology.

Some of the information provided by SBF will be published in BIOTEKNIK & BIOKEMI, while other material, also in the future, will be furnished through our own publications.

Membership

SBF is open to all Nordic enterprises and organizations with an interest in the industrial application of biotechnology. Membership subscriptions normally run for the entire 3-year period of the agreement between SBF and STU. The annual fee, which is between 11,000 kronor and 44,000 kronor, is based upon the turnover of the member enterprise. We also offer membership to foundations, contact bureaus of universities, societies and other non-profit-making organizations for an annual fee of 5,500 kronor. We have at present 56 member enterprises.

Information

Information on activities may be obtained from our office. In 'Bioteknik 85' we have our own stand, Tel. 040-19 47 97.

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BIOTECHNOLOGY

OFFICIAL AT DENMARK'S NORDISK GENTOFTE ON RESEARCH PLANS

Helsingborg BIOTEKNIK & BIOKEMI in Swedish Nov 85 pp 23, 25

[Article by Staffan Dahllof: "Factor VIII, Growth Hormone, Insulin--Genetic Engineering with Unknown Challenger"]

[Text] "We have got the entire DNA for factor VIII. We have made growth hormones in quantities of several grams. And we are certainly able to manufacture human insulin."

Bruno Hansen, research chief of Nordisk Gentofte outside of Copenhagen, mentions research results as if in passing.

However, he is well aware of the fact that Nordisk Gentofte is a challenger within the area of biotechnology.

"Our profile may be somewhat different from that of others, that has been my understanding from talking with journalists. When others talk about promising research, we prefer to await the final results," says Bruno Hansen.

The enterprise, of which he is the research chief, is, as yet, not among the better known research enterprises. Danish biotechnology is usually associated with Carlsberg (growth genetics and cell biology) or with Novo (enzymes and human insulin). Nordisk Gentofte, however, has quietly developed great competence, which, in the eighties, has also yielded commercial results.

Following the American company of Eli Lilly and the Danish company of Novo, Nordisk Gentofte is the world's third largest producer of insulin. Other products are the human growth hormone, factors VIII amd IX--proteins which are needed for the blood to coagulate--as well as diagnostics for determination of blood groups.

So far, it is a question of traditional technology. The insulin is produced from the pancreas of pigs, and the growth hormone from human pituitary glands.

DNA Hybridization Technology

Nordisk Gentofte, however, is now in the process of utilizing the DNA hybridization technology. Its production capacity is being expanded for 150 million Danish kroner.

"I regard genetic engineering as a new tool. However, one does not get far with it without combining it with protein chemistry--and this is where our traditional strength lies," says Bruno Hansen.

"At the same time, I find that the advantages of genetic engineering are sometimes exaggerated. The entry of the human insulin has a purely psychological basis. Neitner in its depressing effect on blood sugar levels, nor in its immunizing effect does the human insulin differ from the highly purified insulin from pigs. The difference, of course, is merely an amino acid.

However, by way of genetic engineering, we may, in the long run, achieve a less expensive insulin."

Bruno Hansen's evaluation is an unstated but clear indication of a distinction from the better known insulin-producing giant enterprise of Novo. The enterprise started producing pure human insulin 3 years ago. Novo us now preparing insulin production by way of genetic engineering.

"However, should it become necessary for marketing reasons, we may also at Nordisk Gentofte produce human insulin by way of genetic engineering," Bruno Hansen says.

However, his enthusiasm about genetic engineering is greater when it comes to the growth hormone.

"We have made the right hGH with E colibacteria in gram quantities, and without the amino acid metionine which Kabi gets in its growth hormone. If everything goes well, we may start our clinical testing at the end of the year," Bruno Hansen says.

The authorities have already given their approval. Nordisk Gentofte will thus become the first company in Denmark to exploit the genetic engineering technology commercially.

Cooperation with Chiron

A third area of research for Nordisk Gentofte is factor VIII, the blood coagulation protein that hemophiliacs lack. In this area, Nordisk Gentofte cooperates with the American company of Chiron, but it has the sole rights, as far as research results are concerned.

The American Genentech and Genetic Institute announced in the fall of 1984 that they had cloned the gene for factor VIII, independently of one another. This resulted in several headlines after publication in NATURE.

"But we, actually, have got quite far. We have got the entire DNA for factor VIII, a gigantic protein with 2,332 amino acids, which we have shown may be produced in living cells," says Bruno Hansen.

Special Set-Up

One reason why the results from Nordisk Gentofte have hitherto been known only to a limited circle is the special set-up of the enterprise.

Nordisk Gentofte became a corporation as late as in 1981. The board of Nordisk Insulinlaboratorium [Nordisk Insulin Laboratory] has a controlling interest in Nordisk Gentofte. Nordisk Insulinlaboratorium, in turn, is an organization, which, according to its regulations of 1926, has to pass the profits from its production on to research and treatment.

"The patients have already paid with their illness," says Bruno Hansen.

Nordisk Insulinlaboratorium, moreover, comprises Niels Steensens Hospital, the largest special hospital in Scandinavia for diabetics, as well as the Hagedorn Research Laboratory, specializing in basic research.

In Charge of Research

Bruno Hansen is in charge of the research both at the Hagedorn Laboratory and at the production company of Nordisk Gentofte.

"But I am merely sitting on a chair in the attic," he says. "Psychologically, it is of some significance that it is research and treatment that are our objectives. Not least the developing countries like this attitude."

"For 20 years, we have been hearing that we shall be crushed by the large giant companies. But that has thus not happened yet.

Nor am I particularly concerned about the future," says Bruno Hansen.

Organization with Three Ramifications

Nordisk Insulinlaboratorium is an organization controlling various units:

Niels Steensens Hospital, treatment and research hospital for diabetics, 118 staff members in 1984.

Nordisk Gentofte, Inc., production company, about to be listed on the Stock Exchange. Turnover in 1984, 694 million Danish kroner, number of staff members 767. Produces insulin, growth hormone, factors 8 and 9 as well as diagnostics. Cooperates with the American Chiron and the British Wellcome. First Danish enterprise with licence to utilize genetic engineering technology.

Hagedorn Forskningslaboratorium [Hagedorn Research Laboratory], a basic research laboratory, specializing in the causes and course of diabetes. Staff of 143 members, 54 of whom are directly involved in research and development.

All of the units are located within the municipality of Gentofte, north of Copenhagen. The name of Gentofte has thus got nothing to do with genetic engineering.

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CSO: 3698/190

BIOTECHNOLOGY

DANISH BIOTECH LAWS SUGGESTED

Helsingborg BIOTEKNIK & BIOKEMI in Swedish Nov 85 p 25

[Article by Staffan Dahllof]

[Text] A flourishing future is predicted for Danish biotechnology. However, political demands for control of genetic engineering technology trouble the industry.

A report which was presented last summer--"Genetic Engineering Technology and security"--resulted in a number of different bills and equally many reservations. The report proposed research legislation under the Ministry of the Interior, production legislation under the Ministry of the Environment, and special legislation on agricultural production under the Ministry of Agriculture. Minister of Industry Ib Stetter, on the other hand, does not want any new laws at all. The representatives of the industrial sector agree and are supported by Professor Bent Harvald, spokesman for the special committee on genetic engineering technology of the Research Council.

Awaiting the decision of the Folketing, the biotechnical enterprises have, in various ways, attempted to comply with the present regulations of the authorities.

Nordisk Gentofte has had most success and has been given the green light for production of the growth hormone by way of genetic engineering.

Novo has been granted a building permit for a new factory which will produce insulin by way of genetic engineering, but the final decision has not been made on production methods to be allowed.

One complication is the fact that the authorities find that they lack experts capable of interpreting the legislation which may result from the discussions among the politicians.

In a report from the EC Commission, biotechnology is evaluated as strong in Denmark. The report points to the fact that the country's economy is for 34 percent based on food processing, for 24 percent on agriculture and for 10 percent on the chemical industry. And these are areas in which biotechnical methods are expected to have great possibilities.

Professor Bent Harvald--associated with Odense Hospital--who has coordinated the hitherto voluntary registration of Danish biotechnology, predicts that well over one third of all Danish enterprises will be affected by the genetic engineering technology by the turn of the century.

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CSO: 3698/190

COMPUTERS

'SUPRENUM' FIRM FOUNDED TO PRODUCE FIRST FRG 'SUPERCOMPUTER'

Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 18 Sep 85 p 1

[Text] The Krupp Atlas Electronics Co. is participating in the development and construction of the first German supercomputer for numeric applications. As was explained by the president of the management of this wholly-owned subsidiary of the Friedrich Krupp Co. (Essen), Karl Friedrich Trieboid, in Bremen, a contract for the corporate foundation of the Suprenum Society for Numeric Supercomputers, Ltdl., is to be agreed on. The development of the hardware and the software is to follow as a joint enterprise.

The stock fund of 3 million marks will involve Krupp Atlas, with 54 percent (27 percent in trust), the Society for Mathematics and Data Processing, Ltd., with 28 percent (10 percent in trust) and the Stellmann Co (Hamburg). According to Triebold, appropriate negotiations between these firms and the Federal Ministry for Research and Technology had been the first step. In future, several German university institutes and firms will participate in the project "Supercomputers for Numeric Applications (Suprenum)." After the conceptual studies for this computer which have already been completed it is already evident that the capacity of American and Japanese supercomputers can be achieved. According to Triebold, the computer is to be used for technical and scientific purposes in the civilian sector, such as meteorology, astronomy and aviation. By the end of 1988 the prototype should be in operation. The anticipated continuation of the project could become a contribution to EUREKA.

Using Suprenum as a superfast computer, real processes from natural science and technology are to be simulated by mathematical modeling. In its architecture it is characterized by the parallel arrangement of many small individual computers which communicate with one another via a rapid network. This structure is particularly suitable for technical and scientific calculations with the help of modern mathematical methods, the so called multi-grid method.

It was further stated that Suprenum has a funding requirement of about 100 million marks. For the developmental phase Krupp Atlas is providing 15 to 20 million marks. A total of 25 percent of the funding would have to be raised by the participating industries. In Triebold's estimation, about 620 supercomputers will have been installed in the western world by the year 1995. Based on experiences in other areas, approximately a third of these could fall to the share of West German manufacturers.

9337/12951
CSO: 3698/130

COMPUTERS

ECRC RESEARCH FOCUSES ON ARTIFICIAL INTELLIGENCE

Paris ZERO UN INFORMATIQUE HEBDO in French 14 Oct 85 p 7

/Text/ How can three get into the same bed intending to do things together but without the legitimate spouses--who are not at the party--finding fault? It is this delicate exercise that Bull, ICL and Siemens have been engaged in for almost 2 years at the ECRC.

At first glance, a visit to the ECRC (European Computer Research Center: the initials are expressed in English) disappoints the newcomer. We anticipated a vast campus humming with learning; we find, in a new suburb of Munich, only some 40 researchers occupying one-half of the first floor of a building resembling a 100 others. Directed by a Frenchman, Herve Gallaire, headed by a German, the severe Dr Veelken, the center meticulously attempts to respect the parity rules among its three shareholders. In September 1985, the distribution of the researchers among Bull, ICL and Siemens was rigorously into thirds. Likewise, the work stations on each desk come from the three constructors, unless otherwise justified (station specialized in artificial intelligence). The hardest, it seems, was to find at the center research goals which do not compete with the research conducted, in person, by each associate. President of the board of directors, Dr Veelken, underlines in a decisive tone that Bull, ICL and Siemens are and will remain "associated competitors." Each freely defines his research strategy, each does or does not use the result of the work conducted at the center.

The Sex of the Angels

Hence, this work can affect only a "precompetitive" phase of the research. It is clearly understood, assures the Siemens representative, that the ECRC will stay "at a distance from the constraints of the market." With such objectives and due dates ranging between 5 and 10 years, we could expect that the Munich researchers are satisfied with discussing the sex of the angels. Moreover, the shareholders "do not wish to to finance academic or university research," it seems that ECRC has only a playing field having an area tending toward zero--a sort of mathematical point. Which, we will agree, is rather scant for mobilizing 40 researchers--of "world level" according to Herve Gallaire, the director--and most of whom have a doctorate. But, in following the visit, we learn that the ECRC will complete, in early 1986, a compiler of Prolog" language "provided with substantial improvements compared to present compilers."

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*No connection whatsoever with the Prologue processing system. The Prolog language is used essentially for artificial intelligence work.

Five minutes earlier we were specifically informed that the artificial intelligence, on which Bull, ICL and Siemens own teams are already working, could not constitute a research axis for ECRC; the latter, we were told, is rather interested in "intelligent data bases" which are a particular adaptation of this general matter called artificial intelligence.

These distinctions only as thick as cigarette paper cannot conceal reality: ECRC is working in the field of artificial intelligence by concentrating on a hard kernel--"knowledge bases and logic programming"--followed by research on the man-machine interaction and on symbolic architectures.

Some explanations are called for: At the heart of the research the "knowledge bases" are to the data bases what the data bases are to simple files: a superset, enriched with new relations. A data base merely established relations whereas the knowledge base contains the rules which permit establishing relations. In order to describe these complex structures and to implement the "inferences" (the deductions, to simplify), special languages are required. Between the two most familiar languages, Lisp and Prolog, the ECRC selected Prolog as being the "most modern."

A Visual Exploration

At a level nearer the user, the purpose of studying "man-machine interfaces" is to translate graphically the complex structures of the knowledge bases and to permit a novice to navigate therein. Primarily, it is a matter of replacing the inquiry languages by a visual exploration. At the other extreme, nearest the machine, a fourth ECRC group is working on the parallel architectures which should permit a more rapid operation of the programming languages when they manipulate, not figures as in the usual computers, but symbols or symbolic data. It should be noted that it is a question of architectural models and not at all component research. As is the case with all the research being pursued at Munich, it may (or may not) be used by each manufacturer for the design of its future series.

An example of the research being conducted at ECRC: Aids to decision making when a spreadsheet program is used. It is well known that with software of this type the user prepares an array whose boxes contain either pure labels (figures and letters) or formulas combining the data of several other boxes. The ECRC researchers have added to this classical software a help function which furnishes at any given time a pertinent explanation of the manner by which the software has arrived at a specific result. Example:

--(User): Why does the profit equal 12,500 Fr?

--(ECRC Software): Because the profit consists mainly of the difference between receipts and costs. However, the receipts which consist chiefly of the number of products sold multiplied by the unit price, grew 30 percent mainly because of the 25-percent increase of the unit price. Etc.

This simplified example shows that ECRC conducts research of a very high conceptual quality, while nevertheless being inspired by concrete preoccupations

and the regard for adapting itself to the best current techniques (windows, graphics, spread sheets, etc. When Herve Gallaire, director of the Munich center, asserts being at the uppermost world level and is not afraid of being compared to the "Xerox Park" of Palo Alto or the IBM Center of San Jose, we are really led to believe him after a day spent in the company of his researchers.

But could we not recognize aloud that this center, whose annual budget barely reaches 50 million French francs, is a success that must be continued and expanded, even if that should threaten some positions acquired at any one of the other participating manufacturers.

13112/12228
CSO: 3698/155

COMPUTERS

EUROPEAN SITES, SCIENTISTS FOR OPTICAL COMPUTER RESEARCH

Bern TECHNISCHE RUNDSCHAU in German 15 Oct 85 pp 138, 139, 141-142

[Article by Arno Noeldechen: "Fundamentals of Optical Computers"; first paragraph is TECHNISCHE RUNDSHAU introduction; boxed material as indicated]

[Excerpts] The speed of light is considerably higher than that of electrons. That is why future computers using the laser as the data carrier instead of electron currents and potentials will be able to compute a hundred to a thousand times faster than the today's fastest computer. Of even greater importance, however, is their potential suitability for true "parallel processing." This opens up undreamed of computing capabilities through a new generation of computers. European research groups are currently neck and neck with their American colleagues. They have a real chance to end the American or Japanese supremacy in computer engineering with European development of the "optical computer."

Nonlinear, Optical Behavior

Optical bistability with induced absorption is of special scientific interest here: It functions on tiny crystals which do not need to have parallel sides for the entrance of the laser beam. This condition previously was considered the exception. But, as the Frankfurt physicist, Professor Dr Hartmut Haug comments, "This exception increasingly appears to be the rule." Haug heads one of the four German research groups within a special research program of the European Commission. His work group has undertaken the task of "learning to understand and calculate the so-called nonlinear, optical properties of semiconductor materials."

Europe and the United States in a Scientific Race

According to the unanimous opinion of the scientists working on the optical computer, European research groups have almost reached "scientific equality" with their American colleagues within the past 2 years.

To accomplish this, European research activities were not even supported by an exceptionally large assistance program. It was enough merely to bring all of the individual scientists or existing research groups together at "one table."

The European Commission allocated approximately DM8 million for its EJOB-Project (European Joint Optical Bistability Project). With that, it financed--in addition to individual national research assistance--at least two meetings of the work groups per year. Currently, 19 work groups from 18 European universities or research labs are receiving EC assistance. With that it was possible very quickly to achieve an efficient division of labor among quite diverse research installations and teams. The common goal--transcending all boundaries--of "transnationally" elaborating the fundamentals of an optical computer united this group of European physicists.

From this standpoint, the EJOB-Project is comparable to no other research sponsorship. Everyone is participating in the project voluntarily, without any kind of "advice" or force. This also distinguishes the project from the governmental projects in Japan or from the projects in the United States, financed with massive public and private funds.

An estimate of the European outlay is not possible. Research projects in universities over here are financed by countries, institutions, or with funds from sources which are not comparable. It can merely be pointed out than these funds are scarcer than in Japan and the United States. And it is obvious that the European computer industry is demonstrating no commitment.

This is a fact which displeases many researchers because, with the current state of research, this is an exceptionally favorable time for entry into this technology of the future. It is doubtful whether the European computer industry will ever again have such an opportunity.

[Box, p 139]

Which Research Teams Are Working on the Fundamentals of the Optical Computer?

In the search for new ways to support European research, the EC Commission, in 1982, adopted the recommendations of the Scottish scientist Desmond S. Smith: Independent of individual national support, the EC Commission should bring together all scientists working on the problems of "optical bistability" or of "the nonlinear optical behavior" of semiconductor materials.

In less than 2 years, the support project EJOB has brought an extremely important group of scientists to the table. In their agreements concerning who will undertake which tasks for the development of an optical computer, it took only this short time to achieve at least "scientific parity" with the United States in research. It has never before been possible to achieve such a "fast" success in joint European research efforts. Because the major emphasis was bringing the relevant scientists together, free from all competitive considerations, for mutual exchange of experience, the financial outlay was small.

In addition to the research groups cited below, there is currently great interest in expanding the circle of those involved.

The idea of expanding the financial framework of the project beginning in 1986 is also under consideration. The relevant committees of the EC Commission also hope for a greater commitment on the part of industry.

Free University of Brussels:
P. Mandel: Dynamics and computer architecture.

Heriot-Watt University of Edinburgh:
S.D. Smith, B.S. Wherrett, W.J. Firth: Macroscopic models for circuits, microscopic nonlinearity, logic gates, transphasors, optical processors, new materials.

University of Frankfurt:
H. Haug, C. Klingshirn: Nonlinearity in solids, multimaterial theory, cadmium sulfide.

Fraunhofer Institute for Physical Measurement Technology, Freiberg:
H. Preier: Infrared laser diodes, lead salts.

University of Milan:
L. Lugiato: Two dimensionality, dynamics.

Max-Planck Institute for Quantum Optics, Munich:
P. Meystre, H. Walter: Circuit models, lithography.

University of Pisa:
E. Arimondo: Timing pulse generator.

Strassburg (CNRS) [National Center for Scientific Research]:
B. Grun, R. Levy, B. Honerlage: Biexciton processes, picosecond-circuit speeds, new materials.

University of Florence:
F.T. Arecchi: Noise behavior.

University College, Dublin:
D.L. Weaire: Theory of propagation velocity.

Technical University of Berlin:
H. Eichler: Bistability in silicon.

Royal Signals and Radar Establishment, Malvern:
A. Miller: Materials experiments.

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CSO: 3698/187

COMPUTERS

COMPUTERS WITH 1 BILLION OPERATIONS/SECOND AT SIEMENS

Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 9 Oct 85 p 4

[Text] The imposing 1,000-megaflop threshold is now being crossed by the renowned West German firm of Siemens with the announcement of its largest vector processor system to date, the VP 400. Up to 1,140 million "floating point operations per second," i.e. 1,140 megaflops, are performed by the new supercomputer. At the same time, they are announcing the new VP 50, with 142 megaflops, ranking under the previous Siemens vector processors, the VP 200 (570 megaflops) and the VP 100 (285 megaflops). The first shipments of the VP 50 may be available from the fourth quarter of 1985, of the VP 400 from the second quarter of 1986.

Supercomputers of this order of magnitude are no longer employed only for calculation-intensive tasks in the technical and scientific realm, such as in space travel, nuclear research or meteorology. More and more branches of industry are now also demanding faster computers, in order to be able to undertake expensive simulations of complex processes more economically and with an efficient use of time. This includes, for example, wind tunnel experiments or the construction and testing of driving mechanisms in automobiles. But vector processors are also in demand in the chemical industry for the simulation of molecular systems or in the semiconductor industry for chip calculation.

The new Siemens vector processors, the VP 50 and the VP 400, are based, like the VP 100 and the VP 200, on pipeline architecture with multiple pipeline units, and consist of one scalar and one vector unit each. The periodicity of the vector unit is extremely short, at only 7 nanoseconds. The main memory structure of the VP 50 ranges from 32 to 128 mbytes, that of the VP 400 from 64 to 256 mbytes. The static memory chips have a switch time of 55 nanoseconds.

The new models, the VP 50 and the VP 400, also use the System/370 command set and the System/370 architecture. Because of their IBM compatibility, the Siemens vector processors are fully integrable into the Siemens-System 7800 environment as well as the IBM hardware and software environments. Fortran 77 is used exclusively as a programming language. The Siemens vector processors are the first supercomputers in which Fortran programs can be transferred from a computer with an earlier design to a vector processor by simple retranslation.

This is supported by the Fortran 77/VP compiler with its automatic vectorization capability.

The purchase price of the individual vector processor models in the FRG, for the basic system including service, is 12 million marks for the VP 50, 16 million marks for the VP 100, 22 million marks for the VP 200 and 32 million marks for the VP 400.

These four vector processors and the accompanying software are being marketed by Siemens in Western Europe.

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CSO: 3698/130

DEFENSE INDUSTRIES

FRANCE OUTLINES VIEWS ON MILITARY USE OF SPACE AT WEU MEETING

Paris ELECTRONIQUE ACTUALITES in French 22 Nov 85 p 12

[First three paragraphs are ELECTRONIQUE ACTUALITES introduction]

[Excerpts] European industry, more specifically the space industry, will not be able to maintain its competitiveness without participating in defense programs. That is the message recently delivered to the WEU symposium on the "Space Challenge for Europe."

On that occasion, France, represented by Hubert Curien, minister of research and technology, argued the necessity for Europe to have space activities in the area of defense. These activities ought to take place "within cooperative contexts to be defined and first within national contexts."

In this respect, the French defense budget for 1986 will be one of a revival of programs for military observation and telecommunication satellites, with a corresponding financial effort of some Fr 20 billion over about a decade.

The necessity for Europe to have space activities in a defense context was argued forcefully by France before her WEU partners. Hubert Curien emphasized that with very rare exceptions--France and Great Britain in military telecommunications--Europe, is completely absent from space defense programs, adding: "A European awakening is becoming urgent in this area." That is why the minister made the assessment that "space activities are therefore necessary in defense in Europe, first in national contexts, then in cooperative contexts yet to be defined. These activities should focus on the nonaggressive applications of space technologies: primarily telecommunications, information gathering, and navigational aids, which would make it possible to maintain the defensive potential of current means without engaging in a new arms race. It is undeniable that such programs are suited to assuring the future workload of the European space industry. Additionally, military space activity would have the effect of permitting the Europeans to respond to the technological challenge, from the Americans in particular.

Which Programs and With Whom?

So, there is a necessity for space activities, but a double question arises: Which programs and with whom? The limited solution proposed by France, or the grandiose SDI (Strategic Defense Initiative) project proposed by President Reagan? France has a very reticent position with regard to an antiballistic program with a strong space component as contained in SDI: "Such a program can only revive the arms race and is thus not desirable. Of course, the concept of an impenetrable shield is appealing, but its feasibility is not established, and placement of a partial shield would only lead to reinforcement of offensive means."

For this concept, France is substituting that of international use of satellites for crisis management and treaty verification. This position differs fundamentally from that of the two other large European partners, Great Britain and the FRG, who feel that it is necessary to accept the American offer of participation in SDI. For its part, the Bonn government is in negotiations with the Americans concerning German participation in this project. As for Italy, it would favor possible involvement in the SDI program, but in a limited fashion.

Even though opinions about SDI are not identical in Europe, the governments are convinced of the necessity to carry out military space programs. The ESA (European Space Agency) clearly declares, for its part, that the agreement which regulates it does not automatically rule out research programs financed by armed forces in its sphere. As for the industrials, currently in surplus production capacity, it is a question of remaining competitive with their American counterparts, and space defense projects would be welcome.

On the Eve of a Technological Leap

French industrials fear a lack of orders after finishing the Telecom 1, Arabsat, TDF 1, and Spot programs and a need to reduce their work forces while awaiting a new series of orders. Of course, Europe is on the eve of an unprecedented technological leap with the Ariane 5, Hermes, and Colombus projects--three large-scale projects in the successful Ariane series currently competing with the American shuttle, whose cumulative costs can now be valued at more than Fr 50 billion and which are to be completed by 1993-1993 [as published]. But the cake should be divided among the European industrials according to the principle of "just rewards" in proportion to the participation of their respective governments.

For Colombus, for example, a program which exceeds Fr 18 billion, France's participation will be 15 percent; Great Britain's will be identical; the FRG's reaching 38 percent and Italy's 25 percent. Furthermore, practical completion of the large European manned projects will not occur for several years. Meanwhile, overequipped European industry will endure a reduction in activity. Mr Martre, Aerospatiale president, even adds: "It is not unlikely that European firms will soon have to embark on a reorganization phase to assure their survival." At Matra, there is a call for reason: "Europe does not have

the means to do everything; it should chose and not overlook the less prestigious projects which currently make commercial space successful." In the midst of the enthusiasm of preparation for manned flights, it is also necessary, insists an official at Matra-Espace, to lay the groundwork for the financial and technical upgrading of existing communications satellites. The firm furthermore is urging the industrials to orbit experiments, production tests in weightlessness, on board the shuttle or automated stations. According to specialists, Matra seems to be taking the lead relative to its European competitors in this domain.

U.S. Space Market: $15 Billion Per Year

It is obvious that the European space industry has reached a turning point. On the one hand, it should assure the transition between the projects nearing completion now and the large projects involving orbital infrastructures for which the period of intense activity will occur in 1990-1991. It is forced, on the other hand, to update its technological expertise. A spokesman at the German firm MBB deplores the weakening of European industry's competitiveness "because it lacks the technologies and the markets available to the American space industry." According to Henri Martre, the American space market is on the order of $15 billion per year and the Soviet market "considerably larger," whereas the European market hardly reaches $1 billion. According to other sources, in the United States more than 3 percent of defense spending is dedicated to space (approximately $9 billion in 1984) in addition to the nonmilitary expenditures of NASA which are at a considerably lower level. Furthermore, in the USSR the effort supported is even greater, making that country the leading space power with approximately 75 percent of the launches made in the past 5 years. It has been ascertained that, during recent years, out of an annual average of 140 successful launches, approximately 70 percent were for military purposes. It was primarily a question of observation and communications satellites.

Remember that France currently has military channels on the nonmilitary Telecom 1 satellite. This communications system, called Syracuse, also includes fixed ground stations and mobile stations (ships and aircraft). In the area of satellite navigation, the Ministry of Defense is involved in the follow-up of the development of the American Navstar system. For observation of earth, French work has focused on the Samro satellite, a 2-metric-ton device with an optical scanning detector, having peak precision superior to that of Spot (10 cm) and capable of being placed in service during the coming decade. In this field as in that of military telecommunications, French choices are being made. Through pronouncements made by Gen Jeannou Lacaze, former chief of staff of the armed forces, on the eve of leaving his position, it is known that French Defense will devote some Fr 20 billion over about a decade for development of an observation satellite proposed for the beginning of the next decade and of a telecommunications satellite which will replace the Syracuse 1 system in 1992. He continued that for the 1995-2005 period, our defense department will need powerful and protected telecommunications satellites, information gathering satellites (optical, infrared, radar, and electromagnetic sensors), as well as navigational satellites in order to end dependency on Navstar. These means could be built along with our European partners, a cooperation which would continue through placement in orbit of a manned station. For the longer term, France could study the feasibility of an antisatellite system based on a ballistic missile, according to General Lacaze.

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CSO: 3698/182

DEFENSE INDUSTRIES

MILITARY DATA PROCESSING AT THOMSON OF FRANCE

Paris ZERO UN INFORMATIQUE HEBDO in French 14 Oct 85 p 7

[Text] It's official: Cimsa and Cintra, both affiliates of Thomson-CSF, are going to be the subject of a merger within a common operating structure. In short, a logical consolidation since the two entities exercise their activity in the military-applications market, with perhaps the Sintra effort leaning toward "processing and graphics" and Cimsa toward "systems".

Under the name Cimsa-Sintra the new group will be devoted to data processing equipment, data processing systems and integrated networks of military communications.

Pruning the Branches

More specifically, the operations will revolve around two main axes: processing the graphics equipment, on the one hand, and design and production of main data processing systems, on the other hand, for military applications of security and industrial control.

The subdividing of Thomson-CGE operations accelerated this merger since, until then, Cimsa (in the Thomson orbit) and Sintra (in the CGE orbit) were engaged in a rather irrational competition. Once Sintra was absorbed by Thomson, order had to be restored to French military data processing. This hard task fell on the shoulders of Jean-Robert Martin last March, at which time he was also named president of the two companies and charged with preparing their consolidation.

At the practical level, this merger was to be accomplished, in a first phase, by having Sintra take over Cimsa in a rental-management arrangement, in order to give birth to a company listed on the Paris Stock Exchange and which would assume the name Cimsa-Sintra.

The number of employees will exceed 4,000 persons, including 1,250 engineers and upper management. In 1984, the combined earnings of Cimsa-Sintra amounted--in comparable terms--to 2,350 million French francs.

Of course, this amount excludes the underwater operations of the two companies which had already been the subject of a consolidation several months ago.

13112/12245
CSO: 3698/147

FACTORY AUTOMATION

FRENCH CIM FIRM FOUNDS TWO SUBSIDIARIES

Paris L'USINE NOUVELLE in French 19 Sep 85 p 51

[Article by Antoine Schoen]

[Text] At a time when giants such as Matra are extricating themselves by building a CIM (computer-integrated manufacturing) center around the General Company for Materials Handling and Storage (CGMS), CGE has placed its bets on a sure thing by creating two subsidiaries.

"GP2 and CGP Reseaux (CGP Networks--CGPR) are two new important blocks in our CIM structure," states Guy Bondoux, manager and general director of the General CIM Company (CGP). "By creating these two subsidiaries, we are expanding our skills into two large fields: computer-aided production management (GPAO), which will be CG2's area, and local industrial networks, which will be CGPR's specialty." These two companies, hatched from the group's internal development, will be operationally staffed from the start.

At a time when the other two French CIM centers, Matra Automation, and Renault Automation, appear to lower their expectations, is it possible for CGP, a CGE subsidiary, to be involved in transforming its CIM effort? "We are only at the start of our task," cautions Guy Bondoux, "but we stayed within our expectations during this year; our bottom line was almost balanced, and we did obtain a 25 percent increase in revenues" (400 million francs with 500 employees).

The key to this incipient success is a pragmatic approach. By building a CIM center around CGMS, CGE has bet on a sure thing, namely, the European leader in materials handling, with an 18 percent share of the market.

Rather than act as a major automated-shop engineer, CGP has relied on this subsidiary to first sell products. "It is impossible today for a company to live solely from the sale of flexible shops. The demand is still not there. On the other hand, many slots are quite profitable, and we are concentrating on them," explains Guy Bondoux.

Little by little, CGP has acquired a broad range of skills: materials handling, GPAO, local or company networks, and robotics (thanks to the two subsidiaries of the group, Scemi and Ateliers et Chantiers de Bretagne). What links are still missing? Two in particular: production machines and CAD (computer-aided design). Guy Bondoux does not discard the possibility of an agreement with a company well placed to fill this last slot. But the group will manufacture machines on its own. After all, CGE does have under its wing Cilas, a European leader in lasers. CGP could easily begin manufacturing laser machines as soon as the need might arise.

Right now, CGP wants first of all to strengthen its European position by watching the major CIM producers: Siemens, Comau, Trumpf, Mandelli, and Philips. These are rivals with which it is very familiar, having already confronted them on foreign markets, where it conducts up to 40 percent of its activity.

11,023
CSO: 3698/145

FACTORY AUTOMATION

PEUGEOT PLANT IN POISSY, FRANCE, AUTOMATES, INSTALLS ROBOTS

Paris L'USINE NOUVELLE in French 19 Sep 85 p 51

[Article by Michel Defaux]

[Text] The PSA plant, which is manufacturing Peugeot's latest model, has caught up with the technologic level of the other European plants: multi-purpose and flexible production facilities in stamping, sheet metal, and painting, as well as a goal of zero stock and zero defects.

It works and works well! The first impression from a visit to the modernized installations at Poissy is that of calm, or at least an absence of feverishness. The technologic step which required an investment of 1.2 billion, appears to have been well accepted. "It is true," acknowledges Andre Moinard, director of production, "that production growth is not causing too much pain. With 250 309's per day at present, we expect to reach a rate of 600 units by the end of this year."

Within 18 months, the plans which Andre Moinard showed us immediately after the shakeup at Poissy, have become reality: production facilities have unquestionably caught up with the technology of the other European automobile manufacturers and have become perfectly integrated into the PSA group.

Automation, productivity, flexibility: these concepts can be found at all stages of production. First of all in stamping (a total investment of 280 million francs), where presses have been automated and tools have been modified to meet PSA's standards; this unit's pride and joy is a three-axis transfer line developed in collaboration with Citroen Industrie, consisting of a double action press which automatically feeds a press working with four tracing tools; a three-axis transfer machine moves the parts from one die to the next. This is where productivity comes in: "We perform practically the same number of operations as we did with five presses, but we produce 960 stampings per hour instead of 400 using the conventional way." And flexibility as well, since the machine accepts 14 different parts.

The time needed to change tools on the press--as the Japanese manufacturers do--has been researched; for some automated lines such as the three-axis line, the managers quote less than 30 minutes.

The metamorphosis is even clearer in the sheet metal sector. As one example, six welding robots were installed at Poissy in December 1983; today there are 106 six-axis robots for materials handling and welding. This multi-purpose line, which is said to be one of the most modern in Europe, has required nearly one-half of the total investment made in Poissy. As a result, the plant will be able to produce three different vehicles with their options.

In terms of technical innovations, this is the first robotized automobile line which uses the latest generation of all-electric robots. "We have selected this type for easy programming, since it is controlled by the same programmable computers. These robots also take less room, are more precise than their hydraulic counterparts, and of course do not leak oil." Also striking is the rather irregular location of the robots with respect to the line: this is due to the use of computer-aided design, which in order to optimize the path of the grippers, has defined the position of each robot with respect to the body.

The second objective, less obvious but equally as important for profitability, is to operate without stock, an idea which we find implemented in the sheet metal sector. The Mulhouse experience has made it possible to depend on known equipment reliability, hence the very small amount of inter-operations stock. "The materials are handled on electric flats between zones, and we simply have a breathing space of about 30 minutes."

The situation is similar at the assembly unit (an investment of 130 million francs) where the elimination of one line has broadened the space between lines from 2 to 9.50 meters. Stacked storage disappeared as a result, and the operators come to pick up parts on mini-shelves at the border of the line. This is the Kanban organization: when the small amount of stock is about to be exhausted, [missing text]. The mechanical unit (an investment of 90 million francs) works on demand: two automated lines, using a computerized supply synchronized with the output of painted bodies, are building without stock 1260 front and rear ends for the 309's and the 205's; one assembly now requires 12 minutes.

Operation Times are Reduced

The last point is the gain obtained in assembly. Even if Poissy did not want to enter advanced applications (no robotized assembly of wheels or windshields), the gain is significant thanks to the good geometry of the bodies, which has allowed the elimination of some adjustments; optical assemblies are installed without any particular adaptation, tail lights are mounted with clips, and so on.

Without disclosing any productivity figures, Andre Moinard is confident: "We can already say that the number of workers needed to assemble body accessories has been cut in half. We will need eight to ten months to reach our maximum pace of 1000 cars per day. At this stage we will aim for the same productivity objectives as the Mulhouse unit."

11,023
CSO: 3698/145

FACTORY AUTOMATION

PRODUCTION EQUIPMENT FOR FIAT'S 'FIRE' ENGINE IN TERMOLI

Paris INDUSTRIES & TECHNIQUES in French 10 Oct 85 pp 41-43

[Article by Alain Perez]

[Text] Fiat has designed its Fire engine for a production that is as automated as possible. Fewer components, simple piston-connecting rod assembly. The solution proves to be equally good for manual maintenance.

Three 1000 cubic-cm engines per minute. The Termoli plant is now one of the most modern of its type: 600 programmable automatic machines, 100 industrial computers, and 150 robots and handlers. This decentralized Fiat plant near Foggia will be totally operational at the beginning of 1986, with a nominal capability of 2100 engines/day; but it is designed to ultimately produce 2500 engines/day in three different sizes: 750, 1000, and 1300 cubic-cm, using the same engine block.

These three engines will power the low and intermediate line of Fiat and Lancia, for at least 15 years, the average lifetime of a production engine in the automobile industry. This is a bet of 630 billion lire (about 3200 million francs) on the part of the Italian manufacturer: 30 billion for engine design and development, and the rest for its production.

From the time of its conception, in 1980, the Turin engineers were thinking automation. As a result, the engine has 273 basic components (instead of 368 for the former Fiat 127 engine) and a total weight of 69 kg (against 78 kg for the 903 cubic-cm). Despite its modest 45 hp at 5000 rpm, the Fire 1000 is worthy of its name: Fully Integrated Robotized Engine.

All the components were designed from the start to limit machining and simplify assembly: 107 work minutes to manufacture a Fire 1000, compared to 231 minutes for the former 903 cubic-cm. Machining takes 46.5 minutes (against 114) and assembly 61 minutes (against 117). Drilling and boring are orthogonal to each other; 56 robots and 92 handlers take care of most of the assembly. The bottom line is that 70 people per team can take care of the engine's assembly (a total of 700 work minutes per day).

Voice Synthesis Confirms Aloud Operator's Orders or Data

Five parallel machining lines: connecting rods, camshafts, crankshafts, heads, and blocks, compose the actual machining shop. They directly feed the single assembly line, which includes only two manual islands; an intermediate line for engine head assembly is inserted between them. The completed engines are directed to automatic test areas. All in all, the machine list consists of 53 transfer machines, 24 grinders, 19 special machines, and nine automatic lathes. The group is completed with 14 control machines and 19 wash stations integrated in the lines. The essential portion of the production equipment was supplied by Comau, a Fiat subsidiary. Termoli 3 has enjoyed a real imagination and esthetics effort, with brightly colored walls and ceramic tiled floors.

A Fiat subsidiary, Teksid, supplies the engine's basic materials in the form of head (light alloy) and engine block (spheroidal iron) castings; a notable feature is the return to cast iron. As a whole, it amounts to 48 kg of castings for a Fire 1000, which is not far from half the engine's total weight after machining. The selection of cast iron is justified by a lower cost (compared to light alloy) and better machinability; some of the engine block walls do not exceed 4 mm.

Interactive Line Controls

The engine block machining line includes 13 stations, two of which are twins: cylinder boring and surfacing. The castings are loaded manually for the time being, but the operation will subsequently be robotized with a six-axis handler which will pick up the blocks from pallets and load them on the line. The machining line also includes 14 automatic control stations (two of which are doubled). The final control station uses a laser system to measure the surface condition of the borings. Most of the line controls are interactive; such is the cylinder bore control station, equipped with an automatic device to correct for tool wear. Drifts in machining quality are rapidly detected by the central computer; dimension parameters are measured constantly, as well as variations with respect to previous parts; any changing trend, even within machining tolerances, is interpreted as a drift in machining quality. This principle protects against bad parts, since the computer, which stores all the data, predicts the time at which any dimension will exceed its tolerances. The data is archived to follow up on the engine during use.

The connecting rod line uses the same procedure. The control monitors have three positions: normal, prealarm, and alarm. The prealarm signal (yellow) indicates a drift and signals to the operator the nature of the problem. A voice synthesizer confirms aloud the orders or data entered by the operator. Engine assembly shows even more notable progress: 78 automatic assembly stations, compared to about 30 on the Ritmo engine assembly line (Turin). A total of 56 programmable robots for the entire assembly with head sub-assemblies and engine pan.

Instead of the spectacular, the Fiat engineers have sought reliability. Delicate assemblies have thus been broken down into several distinct operations, without making use of complex machinery.

Such is the installation of piston-connecting rod-rings assemblies in cylinder bores. At first, an auxilliary preparation station provides matched component assembly (weight and size); the sub-assemblies are then directed to the main line. The four pistons with their hanging half-connecting rods (without caps) are inserted into the cylinder bores; mechanical stops limit connecting rod swings which could damage the bores during insertion. A second station makes the final installation (by compressing the rings). A very simple and very modern mechanical process!

Five Parallel Machining Lines Directly Supply Single Assembly Line

On the same line, a six-axis Smart (Comau) robot installs the oil pump on the block. Here again, the operation is simplified by the early design. The oil pump installed direcly on the engine shaft does not require particular contorsions on the part of the robot's grip. For the same reason, all screws and washers are captive, the captive nuts on the head are reversible, and fasteners are readily accessible. Oddly enough, this design results in simpler engine maintenance, requiring less time for disassembly and assembly by users. What is readily accessible to the robot's grip is even more accessible to the mechanic's hand.

The first engine revolutions of the Fire 1000 take place in a test area, "the most modern in the world" according to Fiat. It is where three test cycles are carried out: cold, typical cycle, and hot. A total of 19 stalls (3+4+12) for a complete test cycle of 399 seconds (63+84+252). The computer memorizes, compares, and archives the readings.

All in all, 103 computers operate at Termoli. The largest user is diagnostics (45 units), followed by control (27), materials and parts stores (12), engine testing (9), assembly (7), machining (3), shop management (2), and control management (1). This is probably the best of its kind at present; until the next one.

Fiat Termoli

The Termoli Fiat unit is dedicated to mechanical operations. Seriously threatened several years ago, it has been updated for today's needs. The Termoli 3 shop started this year is entirely reserved for the production of the Fire 1000. For the time being, this engine is intended for the Lancia/Autobianchi Y 2, whose marketing has just begun. The engine was initially studied in cooperation with Peugeot. At 999 cubic-cm, the Fire 1000 should eventually run the Fiat lower line of Panda and Uno. Studies started at the end of 1980 and production in mid-1985. This engine should still be in service in the year 2000. It replaces the 903 cubic-cm, installed for a good 30 years on the 600, 850, and 127 models.

11,023
CSO: 3698/146

FACTORY AUTOMATION

BRIEFS

ESPRIT SEEING-ROBOT PROJECT--The Microelectronics Applications and Research Institute (MARI) in Newcastle, in northeastern England, is coordinating a European research program funded within the framework of the EC ESPRIT project. Its goal is to construct an industrial robot which can see and feel. FRG and Greek participants are involved in this project, costing approximately 4 million pounds and to be completed in 3 years. MARI will develop a tactile sensor system and be responsible for necessary software and hardware. Joyce-Loebl, a member of the Vickers Group at Gateshead near Newcastle, will customize its existing image processing system for the new project. The Fraunhofer Institute for Production Technology and Automation in Stuttgart is creating the test workstation and constructing a special gripper, while the industrial equipment division of Robert Bosch GmbH from Erbach is responsible for robot control. Prof Spiro G. Tzafestas of Greece is standing by with his control systems know-how, and experts from the University of Newcastle are acting as advisers in the areas of control systems, image processing and chip design. [Text] [Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 16 Oct 85 p 44] 12666

ASEA INDUSTRIAL ROBOT BRANCH--The Swedish electrical and electronics firm ASEA is expanding its industrial robot program through the acquisition of 51 percent of the Norwegian company Trallfa Robot SA (at Byrne near Stavanger). Trallfa Robot produces industrial robot systems for enameling and surface refinement. According to the announcement, the U.S. company De Vilbiss, the Japanese Kobe Steel, the Swedish TM Intermatic, and the Finnish Roboma will continue to be partners in the enterprise. ASEA Robotics intends to establish a robot center in Byrne for demonstrations, tests, training, and customer service. The De Vilbiss Europa GmbH in New Isenburg will continue to be the sole agent for enameling and surface refinement robots from Trallfa. [Text] [Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 16 Oct 85 p 4] 12666

CSO: 3698/188

MICROELECTRONICS

LAYOUT, EQUIPMENT AT SIEMENS CHIP PLANT BEING BUILT NEAR MUNICH

Landsberg PRODUKTION in German 26 Sep 85 pp 4-5

[Text] Siemens Builds Design Center and Technology Complex for Chips 400 MILLION MARKS FOR "MASKED BALL" AT THE BALAN COMPLEX

MUNICH (jfp)--Many of the manufacturing plants of the future promise to offer an exceptionally appealing environment. Such plants are being built by Siemens. A design center with a technology complex for the chips of the future is being constructed at the Balanstrasse plant in eastern Munich. The electronics concern is putting 400 million DM into the buildings, equipment and fittings alone. By 1987 the complex should be in operation and the company moving to gain a position at the forefront of the world market.

The foundations have been laid. At the beginning of 1987, 900 coworkers--more than 400 at new jobs--are to begin work at the integrated-circuit design center and technology complex, since Siemens' Balanstrasse plant is being expanded into a administrative and innovation center for microelectronics. A parking garage with 1200 spaces should be ready as early as December 1985.

The design center, which is in two structural units, and the related office buildings will have 23,000 m^2 of usable area. This will be the location for computer-assisted design of new circuits for a wide range of applications, at state-of-the-art work stations equipped with video monitors.

In the second project, the technology complex, with a total of 15,300 m^3 of enclosed space, will be the central production site for the masks used to fabricate chips at the Munich, Villach, and, later, Regensburg facilities, after which the tiny microstructures will be applied to silicon in more than 100 individual steps.

In addition, a new processing line is being set up at the Balan complex, with pilot production of bipolar high-speed circuits that perform up to two billion switching operations per second.

The technology complex is a functional unit consisting of the office/ laboratory section, the experimental production area, and the supply facilities.

The laboratory building will be largely of conventional construction (reinforced concrete, cast-in-place concrete, prefabricated components, little masonry). Siemens architech Karl Zeppetzauer describes the design developed by the planning team: "We had to construct yet another special foundation, since the adjacent tracts of land contain numerous lines which could not be allowed to slide down. This made a very costly foundation necessary."

Under the office/laboratory building are two basements, one for the air-conditioning system and the other for auxiliary areas such as dressing rooms. The office/laboratory building is 15 m deep, about 60 m long and about 20 m high from the upper edge of the ground to the edge of the roof, which is surmounted by the "drum," with a radius of 6 m.

The drum is a partly glassed-in, partly sheet-metal-clad and heat-insulated steel structure. The glassed-in portion houses the employee lounge. The entire structure is equipped with sprinklers.

The ground floor of the office area is 7 m high and has two levels. Above it are three standard floors for offices and laboratories, and atop that the roof level. The only rooms in which the windows cannot be opened are those with air conditioning. The colors of the facade are Siemens' usual shades of blue, gray and white.

The facade is a curtain wall with complete heat insulation and also conventional construction with a sheet-metal skin, protective glass, and sunscreen to the outside. The coated sheet metal has proven its resistance to hail: there was naturally some pitting, but no splitting of the enamel.

The building (total height 16 m) has a supply basement 5 m high which is divided into supply layers. This is where the supply and waste disposal functions for the entire production system are carried out. Heat recovery is performed at a central location in the machine hall. Pollutants are filtered out at their point of origin.

The main basement, measuring 40 m x 40 m x an inside height of 5 m, is a rigid box. Its weight enables it to intercept vibrations from the outside or from the buildings with their machinery.

The foundation is a single poured slab 50 cm thick. The roof is 80 cm thick and is supported by beams, with a bayed ceiling. Above it is a false floor and atop that is the ultra-clean room per se.

The ultra-clean room and the production area are accessible from the office area through a system of airlocks. On the unobstructed sides the production area has emergency exit doors which can be opened from the inside only.

The outer wall of the building is largely of standard construction, using steel and cladding elements for a sheet-metal facade with insulating glass and inside ventilation. Behind the wall, a walkway leads around the air-conditioned ultra-clean room. The corridor is used for maintenance and as a visitors' gallery.

Above the ultra-clean room per se is the ventilation system. The two floors are suggested by the external architecture of the building.

The steel structure is clad in sheet metal with trapezoidal corrugations; this is covered with nonflammable rock- or glass-wool insulation and topped by a sheet-metal roof.

The primary reason for the steel construction was not the fire protection afforded by this type of covering. Architect Zeppetzauer explains: "Our concern was to save on weight because of the area of the roof. This is possible only when no gravel is used. Consequently the sheet-metal roof, although somewhat more expensive, was safest in the final analysis."

Special features of the construction include the fact that both adjacent sections of the building are used together in practice: the 40-m spanning girders are laid on the columns of the structures on either side.

The forces are diverted over the neighboring building, since the greater weight there absorbs the vibrations in the lateral structures and also takes up the vibrations originating in the front part of the building.

Because of the wide intervals between columns it was not possible to make use of vibration damping, and the Siemens structural engineers have consequently relied on weight. The problem is to leave the vibrations where the weight is, and also to keep the construction light but rigid. The vibrations were calculated out-of-house, by a specialized office.

The machinery building is located on the other long side of the main building. Its unique shape is due to the lack of space. Two floors of deep, but not subdivided basements are primarily designed to accommodate the main distributing frame of the building itself and the waste disposal facilities such as pumping stations and purification systems.

Above this are the clean-room maintenance facilities, and above that on additional floors the power supply stations, followed by the control station for the ventilation system, and on the roof level under the drum, the exhaust-air control station.

The architect: "We did not use any fire doors. We have confidence in the early-warning system and the sprinkler system. For functional reasons and technical reasons having to do with production, an open arrangement is necessary."

The exhaust-air and heat recovery systems are housed in the drum, and there is enough space to accommodate other technologies.

On the short side of the machinery building are ventilation shafts built entirely of concrete. They represent the reinforcement for the building. The supply building is of conventional reinforced-concrete and steel construction, with a fully insulated curtain-wall facade.

The elevator is in the stairwell in the center of the building. In contrast to the layout for the office/laboratory building, which has only one story 4 m high, its drive mechanism remains in the drum.

The supply building is also 15 m wide, but is juts out over the street serving the complex. The distance it projects is two meters, and above it a nozzle-shaped region of calm air extends for another two meters. The lack of space, therefore, has resulted in an advantage for the design of the facade: the machinery building is broken up.

What prompts an international corporation to graft an ultra-sensitive, fully equipped test center, requiring considerable cash outlay, onto a finished manufacturing plant?

The answer is surprising in view of the prevailing unemployment. Not least in importance in the choice of a site were the various opinions of the personnel groups affected by the change in location. Thus the factory of the future had to be built under a number of constraints. The architect is to be congratulated on the fact that an appealing building has also emerged from these conditions.

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CSO: 3698/152

MICROELECTRONICS

SWISS UNIVERSITY INSTALLS CRAY 1S2000 SUPERCOMPUTER

Aarau ELECTRONIQUE in French Oct 85 p 43

[First paragraph is ELECTRONIQUE introduction]

[Excerpts] In October, a Cray 1S2000 computer replaced one of the two Cyber 855 machines in the computer center at the EPFL [Federal Polytechnic College of Lausanne]. It is the first high performance processor--or supercomputer--installed in Switzerland. The event has considerable significance for the EPFL, Swiss higher education and industry because it finally gives Switzerland the means for developing the scientific and technical applications of mathematical simulation.

A Need To Catch Up

The recent appearance of computers equipped with high performance processors (HPP) gives engineers and researchers access to a great variety of phenomena previously impenetrable by means of theory--because of their complexity--and experimentation--because of the excessive cost of tests. Mathematical simulation, "the third pillar of research," confers on those who master it the power to make progress in the disciplines which are for the most part the keystones of modern scientific and industrial progress: fluid mechanics, molecular chemistry, semiconductor physics, and materials science, for example.

But, Switzerland has no HPP. There are already 40 in existence in Western Europe and 130 in the world, with the first machines having been installed in 1976. Our country's backwardness in the area of data processing engineering is particularly serious in the case of large-scale mathematical calculations because it has amplified repercussions in numerous engineering science disciplines, as well as in the basic sciences.

Creation of a Support Group

Access to the Cray will be made through two input computers: a Cyber 855 in the computer center and the VAX 8600 given to the mathematics department this year. This solution opens the door to the Cray 1S equally to DEC system users and to CDC users. The service function of the computer center will thus be expanded inside the school as well as outside.

To share expertise and to assist users, researchers and engineers who already have experience in vectorizaton will be united in an Interdisciplinary Group for Scientific Applications of Vectorial Computers (GASOV).

Ralph Gruber, a physicist at the CRPP, who chaired the HPP committee, will head this extra-departmental unit.

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CSO: 3698/184

MICROELECTRONICS

SIEMENS, FRAUNHOFER AUTOMATE MASKING FOR X-RAY LITHOGRAPHY

Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 16 Oct 85 p 76

[First paragraph is DIE COMPUTER ZEITUNG introduction]

[Text] Future generations of chips will offer structural widths well under 1 micron. Although it is possible with ultraviolet light to generate structures of approximately 0.5 microns, intervals of as small as 0.1 microns can be produced with X-rays. A basic requirement for them is the highly accurate adjustment of masks and wafers. Within the "Bessy" (Berlin Electron Memory Group for Synchrotron Rays) X-ray lithography research group directed by Fraunhofer Institute for Microstructural Technology, Siemens has succeeded in adjusting masks for X-ray lithography to wafers using automation with an accuracy of 0.02 microns.

The smaller the structures that must be delivered by semiconductor technology become, the greater the requirements for precision become for production equipment. In the adjustment of mask to wafer, which must be performed before each delivery of structures, accuracies of from approximately one-fifth to one-tenth of the smallest dimension of the structure are required. It is now possible to adjust masks for X-ray lithography to wafers with a precision better than 30 nanometers (30×10^{-9} meters).

The system developed by Siemens for this includes automated position recognition for the special adjustment structures on the wafer as well as superfine positioning capability for position modification between mask and wafer.

The position recognition system consists of two KS30 television cameras from which images are sent to a computer--SMP system with an SAB 8088 microprocessor. The image processing program determines the translatory and rotary correcting variables for superfine positioning from a relatively large number of angles by means of symmetrical observation. The process is noteworthy for its extremely high stability in the presence of temperature fluctuations. The recently concluded prototype testing of an automated mask adjustment system at "Bessy" yielded a convergence precision of 40 nanometers from numerous automatically adjusted X-ray lithographings.

This value includes X-ray-caused distortions and adjustment errors. The actual positioning accuracy may thus only be estimated. It amounts to approximately 20 nanometers, which corresponds to the width of approximately 200 atoms.

The results obtained demonstrate that, using mask adjustment, structures as small as approximately 0.2 microns are producible and that the equipment needed for this step of the process is now available.

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CSO: 3698/187

MICROELECTRONICS

BRIEFS

FRG LIQUID CRYSTAL DISPLAYS--The Federal Ministry for Research and Technology in Bonn spent almost DM5 million for new types of displays in the years between 1975 and 1984. Numerous research projects with liquid crystals and electrochromic displays were supported. The results, now available as a research report (BMFT-FB-T84-301), deal primarily with the electrooptical effects of the two materials. Their optimalization, along with computer simulations, has contributed much to the development of new liquid crystal displays and increased the concentration of data. It was not successful, however, with displays based on electrooptics. Indeed, the useful life was increased so significantly that a practical application would now be possible, but, because of relatively limited data capacity, this technology is appropriate only for displays with large surfaces. [Text] [Bern TECHNISCHE RUNDSHAU in German 15 Oct 85 p 103] 12666

CSO: 3698/187

SCIENTIFIC AND INDUSTRIAL POLICY

ANALYSIS OF FRANCE'S ROLE IN EUROPEAN HIGH TECH PROJECTS

Rotterdam NRC HANDELSBLAD in Dutch 23 Oct 85 pp 3, 6

[Article by Wubbo Tempel: "The French Challenge: European Industries For a European Market"]

[Text] Nationalism coupled with pragmatism have made France the most important champion of European cooperation in the field of new technology. Industrialists and officials are of one mind concerning the answer to the successes of Japan and the United States: A strong European industry for a European market, without borders and restrictive national legislation.

No country is more European than France as far as new technology is concerned. Nowhere does the realization that the European computer industry serves only thirty percent of its own market--true, the telecommunications industry does have eighty percent, but the microchip industry less than ten percent--seem to have penetrated deeper than in France. And the realization, above all, that something must be done about this in a European context. That a little country like the Netherlands spreads the idea is perhaps not so amazing. But we also hear this song nearly everywhere on a tour through French high tech industry and government.

Isn't this odd for a country which often was suspected of nationalistic sentiments? And which, until three years ago, was making all sorts of big plans, chiefly for reconquering their own French market with their own French industry? The facade of the Ministry of Research and Technology is still adorned with the motto: "For country, science and glory."

No, so strange this isn't. The French industrial nationalism still exists. But France is realizing that more is needed today. A public relations official for the Ministry of Foreign Affairs says it most clearly: "We have large companies. But we no longer can go it alone." Hubert Curien, Minister of Science and Technology, also confirms that things are different now. The reason? "Confrontation with the facts," says Curien.

Three years ago France began its plan for an electronics sector. The existing potential of industries in information technology--in the broadest sense of the word, from microchip producers to software companies--was to be regrouped into an efficient network. Goal: Reconquering the French market

itself. Altogether, 140 billion French francs were to be spent over five years.

Now, with two years to go, the tone is strikingly different. This is confirmed, for example, by Philippe Robin, assistant director of the telecommunications division of the French PTT [Post, Telegraph and Telephone], which has also been charged with coordinating information technology for a year. "Three years ago we didn't foresee that it would be so difficult to compete with the Japanese and the Americans. Both with regard to microchips and with regard to information technology and the computer industry." The competition's level of spending has risen very sharply with its clearest expression in the research on a space shield, on which the American government intends to spend 26 billion dollars in five years.

Robin explains: "The electronics sector has to become a success and so far that has been going nicely," (By comparison: The French trade deficit in the field of information technology was five billion francs last year, while the export and import of other goods rose some thirty percent to 63 and 68 billion, respectively.) "We still have the same goal and the same direction," says Robin. But, he adds, "we have technological problems, problems with finding capable people and money problems." The solution: Outside help.

In French industries the same song is to be heard. Jacques Battistella, assistant director at Matra, the weapons, space-flight, computer and what not company: "Japan and America are really taking a step with their technology. Only all together can we keep up."

Francois Heisbourg, charged with the coordination of international affairs at the microchip and electronics manufacturer Thomson: "Slowly but surely, we were already falling behind. And now the efforts by America and Japan are increasing spectacularly. You could say that the SDI research is long-term, and military, but it's supporting the American industry quite nicely. And, on top of this, there has been an increase in real expenditures of four percent over the last eight, nine years. We have to react to this together."

European Market

French nationalism, combined with probably somewhat less French pragmatism. The result: A European approach. In two fields: Cooperation in the field of basic and applied research and, alongside this, the integration of the European market, so that products made in the one country are allowed into the other without difficulty and, for example, can be connected to equipment in the other country.

Both are necessary, says Ives Sillard, director of Ifremer, the French institute for deep-sea research, and for a month now coodinator of the French activities for the European technology initiative Eureka, because in this way a circle can develop. Cooperating in research makes it easier to work together to develop standards for equipment. That makes all the markets accessible to each other which, in turn, makes it easier to cooperate. The larger market is needed to recoup the sharply rising costs of developing a new product.

Sillard's circle reveals why cooperation with European partners is to be chosen over working with companies overseas. But, along with these formal reasons, one also occasionally encounters simpler anti-American sentiments. "We simply have to call a halt to the American imperialism", says Alain Bensoussan, director of the Inria Institute, which does research in informatics and automation. And Sillard also says: "We just have to free ourselves from the Americans one day, and settle our affairs among ourselves."

Two other factors also contribute to France's nearly unanimous European thoughts. First, France is a country where the high tech industry, a significant part of which is nationalized, has relatively strong contacts with the government. An expanding European sense is thus spreading rapidly.

In addition, and this is probably a not unimportant motivation: As a result of the restructuring of the electronics sector, France, which once had a pretty varied industrial structure in field of information and communications technology, now has a clear national champion in three fields. Bull, which makes computers, Cit-Alcatel, a manufacturer of telecommunications equipment that virtually has a French monopoly in the large, expensive switching centers for public telephone communications, and Thomson, big in microchips, electronics and household appliances, more or less to be compared with Philips.

If those three, and there is little else to mention in the national field, still don't seem able to cope with the competition of foreign companies, there's only one thing for it: International cooperation. Francois Heisbourg of Thomson cites this situation as one of the reasons why his firm formerly was less firmly behind international cooperation. "We used to pay too much attention to our national rivals and were too weak to present ourselves as an equal partner internationally. Now it's much easier to."

Self-Interest

In short, the French Europeanism is well-understood self-interest. Matra's Battistella: "We don't want European projects in order to be European. We want good plans." Minister Curien, referring to the necessity of integrating the European market: "A strong France in a weak Europe, that no longer can be. But neither can there be a strong Germany or a strong Netherlands."

The thoughts of a joint European technological approach found their expression in the Eureka proposal, which was launched in April of this year by the French government. Eureka, originally an abbreviation of European Research Coordination Agency, was the brain-child of Claude Arnaud, a high official in the French Ministry of Foreign Affairs and so a sort of counselor to Minister Dumas.

Again, by the way, two French phenomena: The great influence of such a counsellor on his minister's policy and the capability to develop plans that don't really require much at all in the way of content. The latter is a specialty of the enarques, the graduates of the French Ecole Nationale Superieure, an elite school where many top French officials have received their administrative training.

At first, Eureka was nothing more than a shell, a superficial and overhasty reaction to the American Strategic Defense Initiative. The same technologies as those in the SDI were summed up in three pages of text, along with the necessity of working on it in a European context and, like the Americans, to put aside the greatest possible amounts of government money for it.

There was really just one striking thing in this: The plan was to be strictly "civilian," non-military. This to also snare countries of another mind militarily, such as Sweden and Switzerland, for example.

Only later did the genius of the plan become clear. When everything can and may be, then there isn't any talk of restrictions either. ("We knew only one thing," they now smile and say, "it could not be military.") A sort of framework seems to be developing where everyone who wants can read: Any company that wishes can work together with the European partner of its choice.

Many things about Eureka still remain unclear. "You have your Eureka, I have my Eureka. Everyone has his own Eureka," says, for example, Bull director Emmanuel de Robien. But it is still clear, at least as far as the French view of Eureka is concerned, that the model is the successful cooperation of European industry in the Ariane rocket project and the formation of the Airbus consortium.

That means the support of government money and choosing one's own partners. As far as the necessity of that money is concerned, everyone is in agreement.

In addition, still more governmental measures can be taken, such as taxation measures and legal adjustments. The only one who is currently concerned about money is Robin of the PTT. First, he has to lay out half of the billion francs that his government set aside for Eureka in 1986 and, second, he's still really hoping that Great Britain will come up with money, despite Premier Thatcher's militant refusals.

Eureka is ideal for industry which receives money but doesn't need, per se, to cooperate in exchange with partners from Finland or Turkey, just because they happen to also be participating in Eureka. Understandably, French industry is enthusiastic. In this way, they don't leave themselves so strongly open to the suspicion that it's only just another appeal for more government money: The initiative comes, after all, from Foreign Affairs!

Esprit Project

Something like an aversion to working with foreign European partners could still arise, But, as says Bull's De Robien, for example, that objection has been eliminated by the success of the EEC's Esprit project, which has brought about cooperation in information-technology research that isn't directly market-oriented.

De Robien: "From the very beginning, we have participated in this very enthusiastically, and have seen practical results very quickly." De Robien

was chairman of the Standard Promotion and Application Group, which arose from Esprit and which promotes the interconnectability of equipment. He mentions, as proof of its success, the "Guide for the Use of Standards" that came out in October of last year, 700 copies of which have now been distributed to European and American companies. "That isn't the circulation of a newspaper, but we still think it's a best seller."

If. in practice, Eureka assumes a sort of brokerage function between companies of different countries, cooperating with the support of their respective governments (and it looks like it will turn out that way), then the initiatives from France won't seem so surprising. It will be built up on the basis of existing associations like, for example, the pact between five airplane manufacturers that was announced last week, a logical continuation of the Airbus project.

Wish List

For information and communications technology, it's a matter of expanding the Esprit and Race projects to the industrial, even market level. The wish list of PTT's Philippe Robin: "Particularly as far as microchips are concerned, a firm cannot survive alone. We hope very much that in Eureka a cooperation will develop between Siemens, Philips and Thomson. Along with this, we want cooperation in telecommunications: Plans for a large 'broadband network' in Europe are being developed; they will have to find a place in Eureka and Cit-Alcatel will have to participate. And finally, this is a good opportunity for the computer industry. I'm thinking now of Bull and Siemens."

Work Groups

The companies involved strengthen this picture, even if one cannot yet speak of official projects. For the moment, work groups are scouting the terrain. Thomson's Francois Heisbourg, moreover, wants show that he is most ambitious. There is now a plan for a microprocessor--a microchip that can be designed to serve a special, fixed purpose, as the heart of a calculator, for example --to be developed jointly by Philips, Siemens, Thomson and the Brithish GEC [General Electric Company].

Heisbourg does not want the thing to be named a Europrocessor, as has been suggested a couple times. "No, that just suggests we could win the European market with it. But now we are really concerned with the world market. Only with this as a goal can one be a serious competitor."

To put things in perspective: The desire for European cooperation is not equally strong on all fronts. The urge seems to be decidedly less at Elf-Aquitane, the oil, chemical and biochemical concern. When we pay a visit there, it's true that they don't speak unkindly of the European competition, but they still are specially pleased with how well Elf itself is succeeding in the North Sea.

And the car manufacturer Renault is even less flattering. Their action is perhaps colored by the fact that a strike, including occupation of the

factory, has been in progress for two days at the time of our visit. "Since we are a nationalized concern, the government certainly thinks it can say on our behalf that we will participate. Well, perhaps in due time."

Provisionally, it seems to be chiefly in the "spearhead industries" of information technology, microchips and telecommunications that the concept of cooperation has already taken root strongly.

But even here there is still a deviating tendency: In Telecommunications, however strongly it also is oriented towards a common European network, the efforts are emphatically directed towards American cooperation.

Director Jacques Ernest of Cit-Alcatel: "The American market is absolutely essential to us. It is large, it reacts quickly to novelties and so is a splendid advertising object: If you ship there, then you can use that as an argument everywhere else."

For this reason, CGE [Compagnie Generale d'Electricite], the parent company of Cit-Alcatel has its eye on cooperation with Philips-AT&T which, in exchange for a share of the French market, can effect a penetration of the American market. Here, however, CGE runs up against the French government's European thinking. It is rumored in many quarters that the decision on this matter has, in the meanwhile, wound up in the office of President Mitterrand himself,' and he is said to have no thought of paying heed to pro-American arguments.

But still the dominant trend in the French leading technology scene strongly favors Europe. The question, however, is how stable this viewpoint is, given the fact that, more than ten years ago now, the last big European project in the computer field, Unidata, failed, among other reasons because of France. In Unidata, Philips, Siemens and the French CII [Compagnie Internationale pour l'Informatique], which still existed at that time but since has been absorbed into Bull, jointly tried to vie for the crown with IBM. Thing went wrong, partly because they set their goals much too high, but also because the French government withdrew "its" CII at the first signs of failure and made CII work with the American Honeywell company.

Emmanuel de Robien, involved at the time in the Unidata debacle, now says: "For one thing, we didn't have any good agreements then. But, in addition, everyone now is so aware of the importance of cooperation, that we're not likely to pull something like that again."

Even the election of a more conservative government in March 1986, or the impasse that probably would result were such a right-wing government to have to rule together with the socialist President Mitterand, could not stand in the way of the European movements of the French companies. Sillard: "The European thinking truly goes beyond the parties."

12507/12951
CSO: 3698/94

SCIENTIFIC AND INDUSTRIAL POLICY

DETAILS ON FRG SUBSIDIES TO SMALL FIRMS HIRING R&D PERSONNEL

Munich COMPUTERWOCHE in German 20 Sep 85 p 83

> /Text/ Bonn (CW /COMPUTERWOCHE/)--Small and medium enterprises can get money for R&D personnel from the BMFT /Federal Ministry of Research and Technology/. The federal government is helping out in new hiring this year with an amount of DM55 million. Altogether, about DM500 million are available. But fast action is required: This year's application deadline expires in November 1985.

Medium-sized enterprises which want to step up their R&D activities and which will hire or already have hired new employees between 1 September 1984 and 31 December 1987 are to get support from the BMFT (Federal Minister of Research and Technology /as published/). According to the ministry, enterprises with an annual sales volumes of less than DM200 million and which at the same time do not have more than 1,000 employees are entitled to apply.

With this "hiring subsidy" the BMFT wants to support especially those enterprises that venture to go for new or improved products and processes with in-house personnel and with a risk-taking attitude. The grant will amount to a maximum of DM250,000 per year for enterprises with less than 500 employees. The ministry in Bonn will subsidize gross wages and salaries of newly-hired personnel, qualifying for the payment of the subsidy, up to 15 months, starting as of the hiring date, to the tune of 55 percent. In case of more than 500 employees, the rate is 45 percent, the period of the subsidy per new employee extends over 12 months and the maximum subsidy is DM200,000 annually.

After expiration of the subsidy period, enterprises which can show an annual sales volume of up to DM50 million and which have up to 500 employees can get a subsidy for the personnel costs amounting to 40 percent.

Contribution for New R&D Activities

To get this subsidy--according to the terms of the BMFT--the enterprises must be able to document the R&D-hours of new personnel and an at least just as large increase in the total number of hours worked in the R&D report compared to the preceding year.

There is reported to be a considerable information requirement on these measures regarding personnel-oriented subsidization. The BMFT therefore urges enterprises to submit their applications at the right time; the deadlien for submitting the subsidy applications is 31 November 1985.

For further information, contact: Arbeitsgemeinschaft Industrieller Forschungsvereinigungen e. V. /Registered Association/ (AIF), Bayenthalguertel 23,5000 Koeln 51.

Conditions of the Program for the Subsidization of R&D Personnel In Industry

Research Personnel Hiring Subsidy	Research Personnel Cost Grant
Entitled to Apply	Entitled to Apply
Enterprises with less than DM200 million annual sales volume and less than 1,000 employees	Enterprises with less than DM50 million annual sales volume and less than 500 employees
Criterion	Criterion
Increase in R&D personnel expenditure (gross wages and salaries) due to new hiring	R&D personnel expenditure (gross wages and salaries) of current personnel
Subsidy Rate	Subsidy Rate
55% up to 15 months (45% up to 12 months in enterprises with 500 employees and more)	40% (25% during the 6th subsidy year)
Maximum Amount	Maximum Amount
DM250,000/yr/enterprise (or DM200,000/yr/enterprise with 500 and more employees	DM120,000/yr/enterprise

This table shows the most important features of the BMFT hiring subsidy program which can possibly be combined with the personnel cost grant.

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CSO: 3698/131

SCIENTIFIC AND INDUSTRIAL POLICY

INTERVIEW WITH OFFICIAL WORKING ON FRG EUREKA POLICY

Duesseldorf VDI NACHRICHTEN in German 27 Sep 85 p 5

[Article by G. H. Altenmueller and W. Mock: "Technology Policy: Eureka Last Chance for Europe? Lutz Stavenhagen on the Europe of Technology, of the EC, and of SDI"]

[Excerpts] He has taken office under a lot of pressure to succeed: concrete decisions that can be produced against our competition in the U.S. and the Far East must be achieved at the next ministerial conference on the subject of Eureka in Hannover at the beginning of November. Lutz Stavenhagen, 45-year-old business and political economist from Pforzheim with an international educational background, is now, as a new under-secretary in the foreign office, the man to whom Europe-policy-makers are looking. He gave his position on issues of "the Europe of Technology" for VDI-NACHRICHTEN.

Even though Foreign Minister Genscher (FDP) still has the responsibility and is still at the policy help, Stavenhagen, as a budget and research-policy expert for the Union in the Budnestag, is not only an outsider in the Foreign Office, but also the expert with the best credentials for the things that count in creating a European Technology Community, namely substansive ideas and financing.

In the Federal Research Ministry which, a little piqued at the foreign minister's activities, has been holding back all too long, Stavenhagen is regarded as a dream foreign-office partner for this project. Finally, when still rapporteur for the research budget in the budget committee, he successfully fought to shake money loose at all for the Eureka project.

"In the framework of Europe policy," Stavenhagen told VDI-NACHRICHTEN, "there are two points of emphasis above all: forwarding European union, and the Europe of Technologies." At the center of the efforts for a united Europe stands one project above all: Eureka. "Eureka goes beyond the boundaries of the 10, or the now soon-to-be 12, members of the European Community." In addition--and this is a great advantage as compared to EC projects--Eureka will proceed on the principle of variable geometry, i.e., each different project with different participants will be led by a different country or firm.

"But" - Stavenhagen lays great emphasis on this--"what we're looking for is not just a few spectacular projects, but we must rather push the Europe of Technologies forward even in little things: in unification of standards and interfaces; these must become compatible, so that procurement markets also get bigger. That must remain the second leg."

Precisely in this last area Stavenhagen sees an important role for the European Community. The EC signs as a partner in the Eureka-programs framework along with the participating countries.

An organization comparable to the Brussels bureaucracy is to be avoided for Eureka at all costs. The direction of the individual projects in Eureka is to be handed over to a non-government organization. Those partners who are collaborating on a project are also to organize its leadership themselves. "No officials, no agency, but rather the greatest possible flexibility."

The shaping of the projects still lies in the hands of the responsible politicians at the present moment, of course in close consultation with industry. In this way industry's interest in these projects can be assured. "Industry's interest," Stavenhagen concedes, "naturally varies, until we know how the financing will go and what time-horizons we're dealing with." Precisely for the financing, however, there are as yet no definite principles. Before the Hannover conference, the participants are to work out the guidelines needed here, and to include them in a statement of principles.

Stavenhagen mentioned some basic criteria, however: -the closer projects are to commercial development, the less public money; -Eureka subsidies are to be no better and no worse than national ones, hence 50 percent on average.

Things are not very far along with the finances, to be sure. The 50 to 60 million marks that are available for research and technology in the Federal Research Minister's budget will be used for preparatory [as published: prepared] studies and similar tasks.

But what will become of the EC technology projects, if Eureka is the success everyone hopes it will be, and if the "variable geometry" type of organization proves itself? A highly paid stateless bureaucracy for subsidizing agriculture? Stavenhagen doesn't see such a danger: "The EC behaves like a partner country and is participating in Eureka within the framework of its budget. Secondly, it is undertaking important tasks, that is, it is creating the legal conditions for the unifications of norms and technical standards. Some of the projects we're doing with Eureka, too, are centainly compatible with the traditional technological tasks of the EC. I don't necessarily see any problems here."

But what preconditions does Bonn have for pushing European research forward? Stavenhagen himself could not dispel the impression that even the Federal Republic's research policy has not been especially Europe-oriented. "In the past we often had the principle of the 'just return' in European research

projects, each wanted to get back as much as he had put in. We have yet to learn that we get ahead only as a community, that it's in the interest of all to work in common, because the costs are so extreme. Then a stronger orientation toward European research will also appear. And if we have success with Eureka - without a cumbersome bureaucracy--then this trend toward European community cooperation will increase.

Of course it just isn't the case that European firms aren't cooperating and doing research in common today. If a worthwhile market exists, it will be served. So what is Eureka supposed to be doing that's new, except perhaps financing European prestige projects? "Certainly," says Stavenhagen, "when commercial development is very close, industry moves on its own. Government isn't needed there. But there are a number of things, like the superfast computer, which are of central importance for tomorrow's competitiveness, but whose development costs are too much for industry today, too much even for two or three corporate partners." Here government should step in, but industry's interest--through its financial participation in such projects--must remain clear.

Just as the Europe of Technologies and the European domestic market are not directed against other trade partners, so Eureka is no competition for SDI. "We regard Eureka as compatible with SDI or neutral with respect to SDI. Eureka has something for every European country, independently of its position on SDI. Eureka is a civilian research project, even if we cannot deny potential military spin-offs."

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CSO: 3698/118

SCIENTIFIC AND INDUSTRIAL POLICY

BELGIAN INDUSTRY COURTING RACE, BRITE, EUREKA

Brussels INDUSTRIE MAGAZINE in French Oct 85 p 9

[Article: "New Optics of Athena"]

[Text] A new Athena club was established at the end of last August. Its name: Promoptica, an organization for the promotion of optics. This is a field in which the Walloons have paved their way with companies like ACEC, Ial Space, Opticable, Houget Duesberg Bosson or CRIF, to mention only a few.

Promoptica is supported and sponsored by the minister of new technologies who has, as a mater of fact, allocated 1 million Belgian francs to the project. Mr Melchior Wathelet explains why: "It is not the function of the public sector to establish a highly structured and directive policy of innovation, but to provide a diversified strategic framework capable of encouraging and supporting industrial activity."

As a place for dialogue and contacts, Promoptica has set itself the task of promoting industrial applications of optics, research directly related to the development of this sector and the furthering of ties between Belgian and foreign associations, institutions and companies that pursue the same objectives.

The prospects for Promoptica, whose head office is located at Ial Space in Liege, revolve around several plans. On an industrial level the firm Label will soon be set up in Mons. It plans to develop industrial laser applications. Interlect, specialized in security, envisages the establishment in Wallonia of a division for optical fiber sensors. Ial Space, in turn, is going to set up an organization to implement optics with the help of industrial partners. This organization will be charged with the task of carrying out industrial projects in cooperation with participating firms. In plans for education, a master's degree in optical-electronics will be offered in Liege from next year on. In the beginning of 1986, Promoptica intends to open a school of continuing education complementary to the third year of the training organized every second year by the Belgain Optics Committee. As far as information is concerned, Promoptica, supported by IBM, will be connected to the EARN [European Academic Research Network] system and is expected to organize an annual conference in 1987. Contacts in that

direction have been made with SPIE [International Society for Optical Engineering]. With regard to international cooperation, professional commissions will be organized with the purpose of establishing joint ventures.

This is an extensive program which should allow the Walloons to take their place among big European projects such as RACE [Research and Development in Advanced Communication Technologies for Europe], BRITE [Basic Research in Technology for Europe], EUREKA [European Research Coordination Agency], etc.

25027/13167
CSO: 3698/1007-A

SCIENTIFIC AND INDUSTRIAL POLICY

NETHERLANDS FEARS FRANCE-FRG AXIS IN EUREKA

The Hague ANP NEWS BULLETIN in English 14 Dec 85 p 3

[Text] The Hague, Dec 13--European Affairs State Secretary Wim van Eekelen today warned against Franco-West German domination of Eureka, the European cooperation project aimed at technological progress.

Such domination could be avoided by as great a possible commitment to the project by European Community countries, Van Eekelen told graduating foreign relations students here.

While Eureka could mean a 'serious start' to Europe's efforts to close the technological gap with Japan and the United States, Franco-West German dominance was not in the interests of the Netherlands and other participants, Van Eekelen said.

He voiced dissatisfaction with West German Chancellor Helmut Kohl and French President Francois Mitterrand's preference for Strasbourg as the base for the Eureka secretariat.

The two leaders made known their preference two days after the Eureka-ministers' conference in Hanover early last month.

Van Eekelen said the secretariat should go to Brussels, adding that the European Commission should play a key role because of its relation with the European market and the knowledge and experience 'it had gained with ESPRIT, the European Strategic Programme of Research and Development in Information Technology.

New Bureaucracy

He recommended that the Eureka secretariat be incorporated in the European Commission as this would avoid the risks of setting up a new bureaucracy and of overlapping and eroding existing community research activities.

The state secretary emphasised the Netherlands had an 'extremely positive attitude' towards Eureka, but that it should not shun 'healthy competition'.

Van Eekelen pointed out that only the Netherlands and France had so far contributed financially to the project.

Van Eekelen pleaded for Eureka links with European Commission services who had 'proved their metal' in ESPRIT as it was clear that a small and efficient secretariat with qualified experts was a precondition for the project's success.

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CSO: 3698/207

SCIENTIFIC AND INDUSTRIAL POLICY

NETHERLANDS FUND 'INSTIR' SUBSIDIZES R&D FIRMS, PERSONNEL

Rijswijk PT AKTUEEL in Dutch 2 Oct 85 p 15

[Article by Mr J. A. van Voorhout: "INSTIR Held up to the Light: An Interesting Source of Financing"; first paragraph is introduction by PT AKTUEEL]

[Text] In the coming months, PT AKTUEEL will be presenting a legal column by Mr J. A. van Voorhout and others from the A. F. subsidy advisory office, located in Lunteren (telephone 08388-2687). The column will alternate between a number of short questions by readers and the responses of the experts (written questions can be sent to "Subsidy Column," in care of the editor) and articles taking a closer look at one particular facet of interest to companies. The focus this time is on the much-cited EZ [Ministry of Economic Affairs] subsidies, the "Subsidy Measures for Innovation Stimulation," abbreviated as INSTIR. Over the next 5 years, 1.1 billion guilders have allocated for this program. The program will be analyzed in this article. Points of discussion are the requirements in order to be able to receive this subsidy, the terms by which and with whom an application must be submitted, and so on. For the seasoned and quick-witted entrepreneur, this represents a very attractive source of financing that should not be allowed to get away, because the future of the company depends to an important degree on its efforts in research and development.

Yesterday, 1 October, was the cutoff date for the submission of subsidy applications under this program for the period October 1984 to April 1985. The total period of validity for this program, as foreseen at present, is 5 years, divided into 10 cycles of a half year each. Subsidy applications for the period April 1985 through September 1985 should be submitted by 1 April 1986. The program went into effect on 1 October 1984 and took the place of the "Development Contracts" program. At the same time, the maximum possibility for credit from the Technical Development Credit (TOK) was reduced from 70 to 60 percent. This was because the two programs partly overlap. Both programs, INSTIR and TOK, are intended to stimulate innovation within trade and industry in the Netherlands. Measured as a percentage of gross national product, [research and development] efforts in the Netherlands lag on a global scale behind those in West Germany and Japan by 25 percent. These efforts are being made primarily by companies such as Shell, Philips, Unilever, Akzo and DSM [Dutch State Mines].

INSTIR should thus stimulate research and development in medium-sized and small companies. A motion introduced by the Second Chamber to exclude companies with more than 500 employees, as was the case with the Development Contracts program, was rejected. It was necessary to settle for a graduated system of subsidy brackets.

New Products

In the first bracket, up to 300,000 guilders per 6-month period, the subsidy amounts to 40 percent. Above this, up to a maximum of 2.5 million guilders, it amounts to 15 percent. (These figures are, however, subject to change; a week and a half ago, Minister of Economic Affairs Van Aardenne announced during his explanation of the Technology Policy Overview that the ceiling in the program may be raised to five million guilders--Ed.) Even though this does not exclude the possibility that the large companies will walk off with the largest amount in an absolute sense, the smaller companies will receive the greatest amount of support in relative terms. The intention is that companies that engage in research and development resulting in new products, processes, systems or services in the Netherlands be considered for subsidy.

Which companies are these? In order to answer this question, the terms "company," "research and development," etc. must be defined more precisely. A company is regarded in part as a commercial establishment. Thus, the entrepreneur who maintains several establishments where research and development take place can apply for subsidies several times. Obviously, these establishments cannot have any mutual technical or functional ties with one another, nor can they be located in the immediate vicinity of one another. In addition, a group of companies that jointly pursue research and development is considered as a group. Such a group can consist of a maximum of five entrepreneurs. These companies must be active in the profit sector, and authority within the company cannot be prodominantly in the hands of a low-level government body. Companies engaged in research on commission to third parties are naturally excluded.

Software Houses

The newness of the product, process, system or service is the next aspect. The criterium is: "products, processes, services or systems that are technologically new for the entrepreneur." By adding the words "for the entrepreneur," the process of judging whether one can be considered will not be overly difficult, not even in the service sector. For example, the development of software for the benefit of a consumer group new to the software house is covered by the program and even mentioned by name. It is more difficult to indicate precisely what is and what is not research and development. In an appendix to the program, the Ministry of Economic Affairs attempts to clarify this matter by publishing two outlines. Depending on the stage of the process of rejuvenation, one outline indicates what cannot and the other outline indicates what can be viewed as research and development. These outlines are merely descriptive.

Moreover, the two outlines are to an important degree complementary, and thus present a nearly complete picture of a rejuvenation process. When applied to your problem, the combined whole gives you better insight. You then determine that not everything within your project is eligible for subsidy, but also that opportunities are greater than originally foreseen.

Expenses Eligible for Subsidy

The goal of the program is to make allowances in the personnel expenses for research and development and contract research. A maximum of 75,000 guilders per half year is allowable in personnel expenses for each employee. Likewise, personnel on loan from a temp service and personnel available through entrepreneurs belonging to the group are eligible. The research does not necessarily have to take place within one's own company. Staff members engaged in research at a college, university or specific research institution are similarly covered by the program.

The first hundred hours per employee per half year are not eligible for subsidy. In this way, piecemeal research work that scarcely contributes to the process of rejuvenation is not covered by the program. If possible, this should be taken into consideration if research is not taking place as a full-time activity. If the project can be completed by one man within the subsidy period of a half year and the time aspect does not have a negative effect, then it is wise to allow the work to be carried out by that one man. Similarly, subsidies are available for research contracted out to third parties; it is even expected that the majority of subsidy payments will be for contract research.

Contract Research

If one important raison d'etre of the program is the high cost of personnel in research and it is explicitly oriented towards this in the form of subsidies for payroll expenses, then with contract research not only payroll expenses but also material expenses are eligible for subsidies. Intended here are material expenses associated with special tools and auxiliary equipment necessary for design.

However, as soon as these special tools and auxiliary equipment can be commercially applied to production, they no longer fall under the terms of the program. The purpose of the program is to stimulate research for the benefit of Dutch trade and industry; in a literal sense, it thus does not have to be carried out in the Netherlands. This interpretation is correct as far as contract research is concerned; however, research must take place inside the European Community.

There is no 100-hour threshold for contract research, but 80 percent of accounts paid are considered eligible for subsidy.

Subsidy Level

The subsidy to be paid out is limited to an absolute maximum of 450,000 guilders per company per half year. This figure can be achieved in a two-

bracket system whereby a 40 percent subsidy is paid out on eligible expenses up to 300,000 guilders, with 15 percent paid out on a larger amount up to 2.5 million guilders (0.4 x 300,000 + 0.15 x 2,200,000 = 450,000). The application for subsidies is made in retrospect within a period of 6 months following the period in which the research and development takes place. This can be seen as advantageous because there is no drag on the start of a project in the form of a loss of time in anticipation of subsidy approval, but there is also a disadvantage involved here.

Systematic Research

Research and development is difficult to define, so that despite the fact that accountability for labor hours should be maintained for internal research, it is no easy thing to indicate in advance how large the subsidy should be. Since the question of new services and their assessment is somewhat subjective, this presents another problem. Perhaps this is a reason for smaller companies to set up research more systematically and to look into the various possibilities as much as possible. An extra reason for this is the fact that INSTIR does not have an anti-cumulation stipulation. A combination with the Technical Development Credit is thus possible.

Applications must be submitted to the Investment Accounts Agency (DIR) in Zwolle. The evaluation of your application is done within a period of 3 months by officials of this agency with or without the assistance of officials of the accounting office of the Ministry of Economic Affairs. (Both are bound to secrecy within this framework.) This period of 3 months can be extended in writing by no more than 2 months.

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CSO: 3698/149

SCIENTIFIC AND INDUSTRIAL POLICY

STUDY SHOWS ESPRIT NEEDS MORE MONEY, URGES BUILDING PROTOTYPES

Rotterdam NRC HANDELSBLAD in Dutch 19 Oct 85 p 13

[Article: "More Money Needed for Esprit Than Was Foreseen"]

[Text] Brussels, 19 October--More money is needed for the second round of Esprit, the European strategic research program for information technology, than the 3.8 billion guilders that was made available for the first round, on a fifty-fifty basis, by the European Commission and by industry.

Moreover, there will have to be a separate program in the second round for demonstration projects with a budget that will come to at least one third of the basic program. These recommendations stem from an evaluation committee commissioned by the European Commission to examine whether Esprit is meeting its goals and whether any corrections are needed.

According to the chairman of the evaluation committee, Dr. A.E. Pannenborg, formerly vice-president of Philips, the extra funds for the second round are justified to give Esprit still more weight. He notes that three out of every four project proposals in the first round had to be turned down because of a lack of money. "That's a shame," believes Pannenborg, "many of the investigations that fell through were certainly worth the trouble,"

The evaluation committee is asking for demonstration projects in order to make clear what has been accomplished in Europe. Pioneering users of information technology should be closely involved in these projects. The demonstration projects would also serve a commercial need, according to Pannenborg. They would have a stimulating effect on the market. The evaluation committee wants to prevent the demonstration projects from being dominated by the large concerns. Thus, the smaller businesses should receive about a ten-percent share of these projects.

Despite the evaluation committee's recommendations for coupling the research program more clearly with industrial applications, Pannenborg does not see any conflict between a second round of Esprit and Eureka, the French plan for strengthening Europe's technology. He says that Eureka could be an extension of Esprit. "Where Esprit puts the emphasis on research, while Eureka is oriented primarily towards realization."

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CSO: 3698/95

SCIENTIFIC AND INDUSTRIAL POLICY

ESPRIT IMPROVES SCIENTIFIC, BUSINESS COOPERATION, SAYS EXPERT

Rotterdam NRC HANDELSBLAD in Dutch 19 Oct 85 p 11

[Article by Dick Wittenberg: "Esprit Program Leads to a Network Between EEC Businesses"]

[Text] Brussels, 19 October--"Esprit has unmistakably brought industry and the scientific establishment closer together. Within a very short time, a network of contacts has developed. Not only between researchers, but also on the level of management and administration. People know where to find each other."

Dr. A. E. Pannenborg, chairman of the independent committee that had the task of delivering a first judgment on Esprit, the European research program, speaks words of praise. He calls Esprit, despite a great number of cosmetic defects, "in advance, a success."

The initiative for Esprit was taken a couple years ago by twelve European concerns active in the field of information technology, supported by the European Commission. The research program's goal is close the gap in information technology between Europe and Japan and the United States within ten years. Not even a quarter of the European produces less than ten percent of the world production, even though Europe itself forms about thirty percent of the world market.

At the beginning of 1984, the EEC appropriated 1.9 billion guilders for the first round of Esprit, which runs until September 1989. The first projects have now been under way for around a year. There is not yet much to be said about the results, according to the evaluation committee. What is certain, says Pannenborg, is that the cooperation has gotten off the ground very successfully. "Despite the initial scepticism of many large companies."

"For people of my generation, it is an emotional phenomenon to see how young researchers behave so naturally as Europeans instead of nationalists." A survey by the evaluation committee shows that 54.2 percent of the participants think the cooperation is good and 42.8 find it very good even. Only 0.4 percent of those questioned regularly have differences of opinion with their partners.

Future

Pannenborg has no doubt that the cooperation will in many cases find a future outside of Esprit. He notes the consolidation of forces between Siemens, Bull and ICL [International Computers Limited] in software development. He tells of a French company that rushed to help a British firm in an emergency. According to Pannenborg, this is just the beginning of what could grow to be a wave of cooperation.

Achieving international cooperation within Europe does have its price, as is clear from the evaluation report. Getting acquainted with one another costs time and money there is much travelling back and forth. The administrative costs for the Esprit projects are thus ten to twenty percent higher than normal. In the initial phase, even thirty percent. "But the higher price is easily made up for the European Commission's contributions," calculates Pannenborg.

Standards

It is hard to overestimate the importance to Esprit of making agreements on European standards, finds the evaluation committee. The result, among other things, is that Europe is taking a much stronger stand in international negotiations on normalization. The implementation of European standards is also having a positive effect on market development.

Pannenborg recognizes that Esprit is responsible for only a modest share of the research activities within the EEC. In the large concerns, the European projects comprise about one percent of the research work. "Esprit is more a catalyst than a vehicle," explains Pannenborg. Still, the evaluation committee's survey shows that Esprit has led to setting ambitious goals in research. It has also become clear that research projects are being carried our more quickly. More than eighty-five percent of the participants are convinced that Esprit will strengthen Europe's technological foundations. Nearly fifty percent of those questioned say that even after just five years of Esprit, European industry will be just as far along as the foreign competition, or even farther. Pannenborg's conclusion: "Esprit has, in any event, given industry new self-confidence and motivation."

Bureaucracy

The evaluation committee does, however, have some criticism. Bureaucratic procedures have been delaying the receipt of signed contracts by hald a year and longer. Payments also take much too long, so that smaller businesses and institutions, in particular, have run into problems. In addition, the system used for exchanging information is badly in need of improvement.

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CSO: 3698/95

SCIENTIFIC AND INDUSTRIAL POLICY

BRIEFS

SIEMENS BUILDS BERLIN FACTORIES--Berlin--With almost 26,000 employees, Berlin is and will continue to be in the future the biggest base of Siemens AG /Inc./. During the 1984-1985 fiscal year alone (as of 30 September), the electric industry concern hired an additional 1,500 workers in Berlin. Two new factories will provide 1,000 new jobs in medium-range terms. This was reported by Board Chairman Dr Karlheinz Kaske now in Berlin. Siemens is currently building a factory in Berlin with an investment expenditure of more than DM200 million which, starting in 1987, will produce components for glass fiber communications networks. In addition, a production facility is being put up for electronic control systems at a price tag of DM150 million, which is to be started up in 1937. By the, Siemens AG and the Siemens companies KWU /Power Plant Union Corporation/, Osram, Vacuumschmelze, and Volta-Werke will be operating 16 production facilities in Berlin. Over the past 5 years, Siemens invested DM1.2 billion in Berlin, according to Kaskes. During the fiscal year which has just ended, the figure was more than DM250 million. Siemens spends about just as much for research and development in the city. There was a change in the top management of the Berlin central management on 1 October. The chief until then, Dr Dirk Forkel, retired after reaching the age limit. His successor is Joachim Putzmann who has been with Siemens since 1958. Putzmann was last the business manager of three big divisions in the energy and automation equipment enterprise sector. He has been plenipotentiary-general manager since 1981. /Text/ /Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 9 Oct 85 p 20/ 5058

PHILIPS JOINS RACE PROGRAM--Eindhoven, Dec 18--Philips in combination with AT&T and Philips Telecommunications will take part with 30 research workers and a 11.5-million-guilder budget in the first phase of RACE, a European community sponsored telecommunications research programme, Philips said. RACE, research for advanced communications technologies for Europe, is aimed at establishing an integrated wide-band European communications network in the second half of the 1990s. The first phase is to be completed at the end of next year. It involves studies of technical structures and forms of control needed for the network. It will also determine the necessary research and development work. The first phase involves investments totalling 46 million guilders. The European Community finances half the project. The first phase involves some 120-years of work of which Philips and AT&T Telecommunications will provide roughly one quarter, Philips said. [Text] [The Hague ANP NEWS BULLETIN in English 18 Dec 85 pp 3-4] /7358

CSO: 3698/207

TECHNOLOGY TRANSFER

BRIEFS

'KATALAVOX' SHOWN IN USSR--Strasbourg--Martine Kempf, Alsatian inventor of the voice command computer "Katalavox," will visit the USSR from 27-30 November on the invitation of Prof Svyatoslav Fiodorov, director of the research institute for microsurgery of the eyes at the University of Moscow. She is going to Moscow to adapt her device to the five operating microscopes of the institute. [Text] [Paris AFP SCIENCES in French 21 Nov 85 p 36] 12666

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